

REMARKS

At the time of the Final Office Action, Claims 1-8, 10-12, and 14-22 were pending in this Application. Claims 1-8, 10-12, and 14-22 were rejected. Claims 1, 4, 5, 8, 10-12, 14-15, 17, and 20 have been amended. Claims 21 and 22 have been canceled. New Claims 23 and 24 have been added. Applicant respectfully requests reconsideration and favorable action in this case.

Claim objection

The Examiner objected to Claim 14 as being dependent upon itself. Applicant wishes to thank the Examiner for identifying this error. Applicant has amended Claim 14 consistent with the Examiner's assumption that Claim 14 was intended to depend on Claim 12.

Rejections under 35 U.S.C. § 102

Claims 1-8, 10-12, and 14-22 were rejected by the Examiner under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,549,977 issued to Robert W. Horst et al. ("*Horst*").

Applicants submit that *Horst* cannot anticipate Applicants' amended claims because *Horst* does teach all limitations of Applicants' amended claims, as discussed below.

- **Amended Independent Claims 1 and 4**

Claim 1 has been amended to recite, in part:

identifying a particular intercepted I/O operation from a requesting application;

if the particular intercepted I/O operation is identified as a write operation to a data portion of a disk RAID volume, returning a success status to the requesting application and not forwarding the write operation for processing, such that the write operation is not completed; and

if the particular intercepted I/O operation is identified as an access to a non-data portion of the disk RAID volume, passing the non-data portion access I/O operation to the disk driver for processing.

Horst does not disclose these limitations. First, *Horst* does not disclose “returning a success status” to an application requesting a write operation and “not forwarding the write operation for processing, such that the write operation is not completed.”

The Examiner has pointed to portions of *Horst* as disclosing various limitations regarding the handling of write operations. First, in the Non-Final Office Action mailed March 23, 2006, the Examiner points to Column 7, lines 38-55 of *Horst*. (Non-Final Office Action, Page 3). This portion of *Horst* discloses:

B. Deferring Completion Interrupts

In order to improve write performance in accordance with one aspect of the invention, the write cache is enabled, but completion interrupts are deferred and queued in the Pending Completion Write Queue (PCWQ) 160 (FIG. 1) until a flush of the write cache is completed. The drive caches are therefore safely used to coalesce writes and therefore increase performance. Whenever the host runs out of writes to give to the controller, the controller issues flush commands to the drives. When the flushes are finished, the controller sends the queued completion interrupts to the host. With enough write data queued, the cost of the extra flushes is negligible and performance is nearly the same as with the otherwise unsafe write cache on. This aspect can be implemented in either the device driver or the firmware. The firmware implementation is preferred because it has better performance and is OS-independent. The required firmware is much less complex than the firmware typically used to manage a battery backed-up cache.

(emphasis added)

Thus, *Horst* arguably discloses deferring the completion of write commands by queuing the write commands, but not “not forwarding the write operation for processing, such that the write operation is not completed,” as recited in amended Claim 1.

Second, in the Final Office Action, the Examiner points to Column 1, lines 20-33 of *Horst*. (Final Office Action, Page 2). This portion of *Horst* discloses:

In order to assure reliability in the event of unexpected power failures, high-performance RAID arrays generally require a battery backup or uninterruptable power supply (UPS). Existing systems are typically

configured such that the host is informed that a write has been completed once the write data has been written to a write cache of a disk drive or an array controller. The danger is that power can be lost after the data has been written to the cache but before the data has been written to disk. The battery backup allows cached write data to be maintained until power is restored so that the cached write can be completed. An UPS allows extra time for a write to be completed before power is finally lost. An UPS or a battery backup, however, adds substantially to the initial cost of a RAID array.

(emphasis added)

Thus, *Horst* explains that in existing systems, problems may arise when power is lost after write data has been written to a write cache of a disk drive, but before it is written to disk. Thus, the write data is forwarded to a disk drive for processing (i.e., to be written to disk), but may be lost if there is a power outage before the data is transferred from cache to the disk. Thus, this passage does not teach “returning a success status to [a] requesting application” or “not forwarding the write operation for processing, such that the write operation is not completed.”

Further, there is nothing else in *Horst* that can be deemed as disclosing “returning a success status” to an application requesting a write operation and “not forwarding the write operation for processing, such that the write operation is not completed,” as recited in amended Claim 1.

For at least these reasons, Applicants respectfully request reconsideration and allowance of amended Claim 1, as well as Claims 2-3 and 23 that depend therefrom. In addition, for analogous reasons, Applicants request reconsideration and allowance of amended independent Claim 4, as well as Claims 5-8 and 10-11 that depend therefrom.

- **Amended Independent Claim 12**

Claim 1 has been amended to recite, in part:

determine whether monitored I/O operations from a requesting application are associated with a data portion of the RAID or a non-data portion of the RAID;

filter I/O operations associated with a data portion of the RAID such that a signal is generated and returned to the requesting application and the I/O operations are not forwarded for processing; and

not filter I/O operations associated with a data portion of the RAID such that I/O operations associated with a non-data portion of the RAID are forwarded to the disk driver for processing.

Horst does not disclose determining whether I/O operations are associated with a data portion of the RAID or a non-data portion of the RAID, and filtering I/O operations that are associated with a data portion of the RAID, and not filtering I/O operations that are associated with a non-data portion of the RAID.

Horst also fails to disclose returning a signal to a requesting application for I/O operations associated with a data portion of the RAID and not forwarding such I/O operations for processing.

For at least these reasons, Applicants respectfully request reconsideration and allowance of amended Claim 12, as well as Claims 14-20 and 24 that depend therefrom.

- **Dependent Claims**

In addition to depending from independent Claims 1, 4, and 12, various dependent claims include additional limitations not disclosed by *Horst*. For example, amended Claim 8 recites:

8. The information handling system of Claim 4, further comprising the program of instructions operable to respond to read operations directed to the data portion by returning a zeroed buffer to an application requesting the read operation and not forwarding the read operation for processing. (emphasis added).

Similarly, new Claims 23 and 24 recite:

23. The method of Claim 1, further comprising:
if the particular intercepted I/O operation is identified as a read operation from a data portion of a disk RAID volume, returning a buffer filled with zeroes to the requesting application and not forwarding the read operation for processing, such that the read operation is not completed. (emphasis added).

24. The computer readable medium of Claim 12, further comprising the program of instructions operable to return read operations of the data portion of the RAID to the requesting application with a buffer filled with zeroes and not forwarding the write operations for processing. (emphasis added).

Horst clearly does not disclose such claim elements. *Horst* does not disclose returning a “zeroed buffer” or a “buffer filled with zeroes” to an application that requested a read operation. *Horst* also fails to disclose “not forwarding” write operations for processing. For at least these reasons, as well as those discussed above regarding independent Claims 1, 4, and 12, Applicants respectfully request allowance of the various dependent claims.

CONCLUSION

Applicant believes that this paper contains a reply to each ground of objection and rejection in the Office Action. Applicant respectfully requests reconsideration and favorable action of the claims as amended.

Applicants enclose a Request for Continued Examination and Petition for Two Month Extension of Time, and authorize the Commissioner to charge the \$790.00 and \$450.00 fees to Deposit Account No. 50-2148 of Baker Botts L.L.P.

Applicants believe there are no additional fees due at this time. However, the Commissioner is hereby authorized to charge any fees necessary or credit any overpayment to Deposit Account No. 50-2148 of Baker Botts L.L.P.

If there are any matters concerning this Application that may be cleared up in a telephone conversation, please contact Applicants' attorney at 512.322.2689.

Respectfully submitted,
BAKER BOTTS L.L.P.
Attorney for Applicant



Eric M. Grabski
Reg. No. 51,749

SEND CORRESPONDENCE TO:
BAKER BOTTS L.L.P.
CUSTOMER ACCOUNT NO. **23640**
512.322.2689
512.322.8320 (fax)